AMENDMENTS

In The Claims:

1 – 11 cancelled.

12. (new) An ultra high molecular weight polyethylene block having a molecular weight of not less than about 5 million, having been crosslinked by irradiation at a level of at least about 1 MR and having been heated, subjected to pressure, and cooled.

13. (new) An ultra high molecular weight polyethylene block according to Claim 12, wherein said irradiation is gamma irradiation at a level of from about 1 MR to about 5 MR.

14. (new) An ultra high molecular weight polyethylene block according to Claim 12, wherein said heating is in a range of from about 50° C lower than the melting temperature of the crosslinked ultra high molecular weight polyethylene to about 80° C higher than the melting temperature.

15. (new) An ultra high molecular weight polyethylene block according to Claim 14, wherein said heating is in a range of from about 50° C lower than the melting temperature of the crosslinked ultra high molecular weight polyethylene to the melting temperature.

16. (new) An ultra high molecular weight polyethylene block according to Claim 15, wherein said heating is in a range from the melting temperature of the crosslinked ultra high molecular weight polyethylene to about 80° C higher than the melting temperature.

17. (new) An ultra high molecular weight polyethylene block according to Claim 12, wherein said pressure is applied so as to deform the block.

18. (new) An ultra high molecular weight polyethylene block according to Claim 17, wherein deformation is in a direction perpendicular to the plane of compression.

19. (new) An ultra high molecular weight polyethylene block according to Claim 17, wherein said block is cooled in a compression-deformed state under pressure.

20. (new) An ultra high molecular weight polyethylene block according to Claim 18, which has an orientation of crystal planes in a direction parallel to the compression plane.

21. (new) An ultra high molecular weight polyethylene block according to Claim 18, wherein said block, after compression, has a thickness of at least about 5 mm in a direction perpendicular to the compression plane.

22. (new) An ultra high molecular weight polyethylene block according to Claim 18, wherein said block, prior to compression, has a thickness of at least about 3 cm.

23. (new) An ultra high molecular weight polyethylene block having a molecular weight of not less than about 5 million, having been crosslinked by irradiation at a level of at least about 1 MR and having been heated to a compression-deformable temperature, subjected to pressure, and cooled so as to orient the crystal planes of said polyethylene.

24. (new) An ultra high molecular weight polyethylene block according to Claim 23, wherein said pressure is applied so as to compression deform the block in a direction perpendicular to the compression plane, and wherein said block is cooled and solidified in a compression-deformed state under pressure.

25. (new) An ultra high molecular weight polyethylene block according to Claim 24, wherein said block has an orientation of crystal planes in a direction parallel to the compression plane.

26. (new) An ultra high molecular weight polyethylene block according to Claim 23, wherein said heating is in a range of from about 50° C lower than the melting temperature of the crosslinked ultra high molecular weight polyethylene to about 80° C higher than the melting temperature.

27. (new) An ultra high molecular weight polyethylene block according to Claim 26, wherein said heating is in a range of from about 50° C lower than the melting temperature of the crosslinked ultra high molecular weight polyethylene to the melting temperature.

28. (new) An ultra high molecular weight polyethylene block according to Claim 26, wherein said heating is in a range from the melting temperature of the crosslinked ultra high molecular weight polyethylene to about 80° C higher than the melting temperature.

29. (new) An ultra high molecular weight polyethylene block according to Claim 23, wherein said block has been subjected to isothermal crystallization.

30. (new) An ultra high molecular weight polyethylene block according to Claim 23, wherein said block has been subjected to isothermal treatment at a temperature of from about 100°C to about 130°C for a period of from about 1 hour to about 20 hours.

31. (new) An ultra high molecular weight polyethylene block having a molecular weight not less than about 5 million, having been crosslinked by irradiation at a level of at least about 1 MR and having been heated to a temperature of from about 50° C lower than the melting temperature of the crosslinked ultra high molecular weight polyethylene to the melting temperature, subjected to pressure, and cooled.

32. (new) An ultra high molecular weight polyethylene block according to Claim 31, wherein said irradiation is gamma irradiation at a level of from about 1 MR to about 5 MR.

33. (new) An ultra high molecular weight polyethylene block according to Claim 31, wherein said pressure is applied so as to deform the block.

34. (new) An ultra high molecular weight polyethylene block according to Claim 33, wherein said deformation is in a direction perpendicular to the plane of compression.

35. (new) An ultra high molecular weight polyethylene block according to Claim 34, wherein said block is cooled in a compression-deformed state under pressure.

36. (new) An ultra high molecular weight polyethylene block according to Claim 35, which has an orientation of crystal planes in a direction parallel to the compression plane.

37. (new) An ultra high molecular weight polyethylene block according to Claim 34, wherein said block, after compression, has a thickness of at least about 5 mm in a direction perpendicular to the compression plane.

38. (new) An ultra high molecular weight polyethylene block according to Claim 31, wherein said block has been subjected to isothermal crystallization.

39. (new) An ultra high molecular weight polyethylene block according to Claim 31, wherein said block has been subjected to isothermal treatment at a temperature of from about 100°C to about 130°C for a period of from about 1 hour to about 20 hours.

40. (new) A method for producing an ultra high molecular weight polyethylene block, comprising:

(a) crosslinking an ultra high molecular weight polyethylene block having a molecular weight not less than 5 million by irradiating the block with a high energy radiation at a level of at least about 1 MR;

(b) heating said crosslinked block up to a compression deformable temperature;

(c) subjecting said heated block to pressure; and

(d) cooling said block.

41. (new) A method for producing an ultra high molecular weight polyethylene block according to Claim 40, wherein said irradiation is gamma irradiation at a level of from about 1 MR to about 5 MR.

42. (new) A method for producing an ultra high molecular weight polyethylene block to Claim 40, wherein said heating is in a range of from about 50° C lower than the melting temperature of the crosslinked ultra high molecular weight polyethylene to about 80° C higher than the melting temperature.

43. (new) A method for producing an ultra high molecular weight polyethylene block according to Claim 42, wherein said heating is in a range of from about 50° C lower than the melting temperature of the crosslinked ultra high molecular weight polyethylene to the melting temperature.

44. (new) A method for producing an ultra high molecular weight polyethylene block according to Claim 42, wherein said heating is in a range from the melting temperature of the crosslinked ultra high molecular weight polyethylene to about 80° C higher than the melting temperature.

45. (new) A method for producing an ultra high molecular weight polyethylene block according to Claim 40, wherein said pressure is applied so as to deform the block.

46. (new) A method for producing an ultra high molecular weight polyethylene block according to Claim 45, wherein said deformation is in a direction perpendicular to the plane of compression.

47. (new) A method for producing an ultra high molecular weight polyethylene block according to Claim 46, wherein said block is cooled in a compression-deformed state under pressure.

48. (new) A method for producing an ultra high molecular weight polyethylene block according to Claim 47, which has an orientation of crystal planes in a direction parallel to the compression plane.

49. (new) A method for producing an ultra high molecular weight polyethylene block according to Claim 46, wherein said block, after compression, has a thickness of at least about 5 mm in a direction perpendicular to the compression plane.

50. (new) A method for producing an ultra high molecular weight polyethylene block according to Claim 46, wherein said block, prior to compression, has a thickness of at least about 3 cm.

51. (new) A method for producing an ultra high molecular weight polyethylene block according to Claim 46, wherein said cooled block has a melting point of from about 135° C to about 155° C.

52. (new) A method of producing an ultra high molecular weight polyethylene block according to Claim 40, wherein after said subjecting to pressure step, said block is subjected to isothermal crystallization.

53. (new) A method for producing an ultra high molecular weight polyethylene block according to Claim 40, wherein after said subjecting to pressure step, said block is subjected to isothermal treatment at a temperature of from about 100°C to about 130°C for a period of from about 1 hour to about 20 hours.

54. (new) An artificial joint component for implantation in a human or other animal, wherein said component is formed from an ultra high molecular weight polyethylene block having a molecular weight not less than about 5 million, said block having been crosslinked by irradiation at a level of at least about 1 MR and having been heated, subjected to pressure, and cooled.

55. (new) An artificial joint component according to Claim 54, wherein said irradiation is gamma irradiation at a level of from about 1 MR to about 5 MR.

56. (new) An artificial joint component according to Claim 54, wherein said heating is in a range of from about 50° C lower than the melting temperature of the crosslinked ultra high molecular weight polyethylene to about 80° C higher than the melting temperature.

57. (new) An artificial joint component according to Claim 56, wherein said heating is in a range of from about 50° C lower than the melting temperature of the crosslinked ultra high molecular weight polyethylene to the melting temperature.

58. (new) An artificial joint component according to Claim 56, wherein said heating is in a range from the melting temperature of the crosslinked ultra high molecular weight polyethylene to about 80° C higher than the melting temperature.

59. (new) An artificial joint component according to Claim 54, wherein said pressure is applied so as to deform the block.

60. (new) An artificial joint component according to Claim 59, wherein said deformation is in a direction perpendicular to the plane of compression.

61. (new) An artificial joint component according to Claim 60, wherein said block is cooled in a compression-deformed state under pressure.

62. (new) An artificial joint component according to Claim 61, which has an orientation of crystal planes in a direction parallel to the compression plane.

63. (new) An artificial joint component according to Claim 60, wherein said block has a thickness, after compression, of at least about 5 mm in a direction perpendicular to the compression plane.

64. (new) An artificial joint component according to Claim 60, wherein said block, prior to compression, has a thickness of at least about 3 cm.

65. (new) An artificial joint component according to Claim 54, wherein said irradiation is conducted in the presence of oxygen.

66. (new) An artificial joint component according to Claim 54, wherein said irradiation is conducted under a vacuum or in an inert atmosphere.

67. (new) An artificial joint component according to Claim 54, wherein said block, after cooling, is processed to form said component.

68. (new) An artificial joint component according to Claim 65, wherein said block, after cooling, is processed by a process comprising cutting said block to form said component.

69. (new) An artificial joint component according to Claim 54, wherein said block has been subjected to isothermal crystallization.

70. (new) An artificial joint component according to Claim 54, wherein said block has been subjected to isothermal treatment at a temperature of from about 100°C to about 130°C for a period of from about 1 hour to about 20 hours.

71. (new) An artificial joint component for implantation in a human or other animal, wherein said component is formed from an ultra high molecular weight polyethylene block having a molecular weight not less than about 5 million, said block having been crosslinked by irradiation at a level of at least about 1 MR and having been heated to a temperature of from about 50° C lower than the melting temperature of the crosslinked ultra high molecular weight polyethylene to the melting temperature, subjected to pressure, and cooled.

72. (new) An artificial joint component according to Claim 71, wherein said irradiation is gamma irradiation at a level of from about 1 MR to about 5 MR.

73. (new) An artificial joint component according to Claim 71, wherein said pressure is applied so as to deform the block.

74. (new) An artificial joint component according to Claim 73, wherein said deformation is in a direction perpendicular to the plane of compression.

75. (new) An artificial joint component according to Claim 74, wherein said block is cooled in a compression-deformed state under pressure.

76. (new) An artificial joint component according to Claim 75, which has an orientation of crystal planes in a direction parallel to the compression plane.

77. (new) An artificial joint component according to Claim 74, wherein said block has a thickness, after compression, of at least about 5 mm in a direction perpendicular to the compression plane.

78. (new) An artificial joint component according to Claim 71, wherein said irradiation is conducted in the presence of oxygen.

79. (new) An artificial joint component according to Claim 71, wherein said irradiation is conducted under a vacuum or in an inert atmosphere.

80. (new) An artificial joint component according to Claim 71, wherein said block, after cooling, is processed to form said component.

81. (new) An artificial joint component according to Claim 78, wherein said block, after cooling, is processed by a process comprising cutting said block to form said component.

82. (new) An artificial joint component according to Claim 71, wherein said block has been subjected to isothermal crystallization.

83. (new) An artificial joint component according to Claim 71, wherein said block has been subjected to isothermal treatment at a temperature of from about 100°C to about 130°C for a period of from about 1 hour to about 20 hours.

84. (new) A method for producing an ultra high molecular weight polyethylene artificial joint component for implantation in a human or other animal, comprising:

(a) crosslinking an ultra high molecular weight polyethylene block having a molecular weight not less than 5 million by irradiating the block with a high energy radiation at a level of at least about 1 MR;

(b) heating said crosslinked block up to a compression deformable temperature;

(c) subjecting said heated block to pressure;

(d) cooling said block; and

(e) processing said block to form said component.

85. (new) A method for producing an ultra high molecular weight polyethylene artificial joint component according to Claim 84, wherein said irradiation is gamma irradiation at a level of from about 1 MR to about 5 MR.

86. (new) A method for producing an ultra high molecular weight polyethylene artificial joint component according to Claim 84, wherein said heating is in a range of from about 50° C lower than the melting temperature of the crosslinked ultra high molecular weight polyethylene to about 80° C higher than the melting temperature.

87. (new) A method for producing an ultra high molecular weight polyethylene artificial joint component according to Claim 86, wherein said heating is in a range of from about 50° C lower than the melting temperature of the crosslinked ultra high molecular weight polyethylene to the melting temperature.

88. (new) A method for producing an ultra high molecular weight polyethylene artificial joint component according to Claim 86, wherein said heating is in a range from the melting temperature of the crosslinked ultra high molecular weight polyethylene to about 80° C higher than the melting temperature.

89. (new) A method for producing an ultra high molecular weight polyethylene artificial joint component according to Claim 84, wherein said pressure is applied so as to deform the block.

90. (new) A method for producing an ultra high molecular weight polyethylene artificial joint component according to Claim 89, wherein said deformation is in a direction perpendicular to the plane of compression.

91. (new) A method for producing an ultra high molecular weight polyethylene artificial joint component according to Claim 90, wherein said block is cooled in a compression-deformed state under pressure.

92. (new) A method for producing an ultra high molecular weight polyethylene artificial joint component according to Claim 91, which has an orientation of crystal planes in a direction parallel to the compression plane.

93. (new) A method for producing an ultra high molecular weight polyethylene artificial joint component according to Claim 90, wherein said block has a thickness, after compression, of at least about 5 mm in a direction perpendicular to the compression plane.

94. (new) A method for producing an ultra high molecular weight polyethylene artificial joint component according to Claim 90, wherein said block, prior to compression, has a thickness of at least about 3 cm.

95. (new) A method for producing an ultra high molecular weight polyethylene artificial joint component according to Claim 92, wherein said cooled block has a melting point of from about 135° C to about 155° C.

96. (new) A method for producing an ultra high molecular weight polyethylene artificial joint component according to Claim 84, wherein said irradiation is conducted in the presence of oxygen.

97. (new) A method for producing an ultra high molecular weight polyethylene artificial joint component according to Claim 84, wherein said irradiation is conducted under a vacuum or in an inert atmosphere.

98. (new) A method for producing an ultra high molecular weight polyethylene artificial joint component according to Claim 84, additionally comprising processing said block, after cooling, to form said component.

99. (new) A method for producing an ultra high molecular weight polyethylene artificial joint component according to Claim 96, additionally comprising processing said block, after cooling, by a process comprising cutting said block to form said component.

100. (new) A method of producing an ultra high molecular weight polyethylene artificial joint component according to Claim 84, wherein after said subjecting to pressure step, said block is subjected to isothermal crystallization.

101. (new) A method for producing an ultra high molecular weight polyethylene artificial joint component according to Claim 84, wherein after said subjecting to pressure step, said block is subjected to isothermal treatment at a temperature of from about 100°C to about 130°C for a period of from about 1 hour to about 20 hours.

102. (new) An ultra high molecular weight polyethylene block having been crosslinked by irradiation, subjected to pressure at a deformation temperature, and subjected to isothermal treatment.

103. (new) An ultra high molecular weight polyethylene block according to Claim 102, wherein said irradiation is gamma irradiation at a level of at least about 1 MR.

104. (new) An ultra high molecular weight polyethylene block according to Claim 102, wherein said deformation temperature is in a range of from about 50° C lower than the melting temperature of the crosslinked ultra high molecular weight polyethylene to about 80° C higher than the melting temperature.

105. (new) An ultra high molecular weight polyethylene block according to Claim 104, wherein said deformation temperature is in a range of from about 50° C lower than the melting temperature of the crosslinked ultra high molecular weight polyethylene to the melting temperature.

106. (new) An ultra high molecular weight polyethylene block according to Claim 104, wherein said deformation temperature is in a range from the melting temperature of the crosslinked ultra high molecular weight polyethylene to about 80° C higher than the melting temperature.

107. (new) An ultra high molecular weight polyethylene block according to Claim 102, wherein said pressure is applied so as to deform the block.

108. (new) An ultra high molecular weight polyethylene block according to Claim 107, wherein said block is cooled in a compression-deformed state under pressure.

109. (new) An ultra high molecular weight polyethylene block according to Claim 108, which has an orientation of crystal planes in a direction parallel to the compression plane.

110. (new) An ultra high molecular weight polyethylene block according to Claim 102, wherein said isothermal treatment is at a temperature of from about 100° C to about 130° C for a period of from about 1 hour to about 20 hours.

111. (new) A method for producing an ultra high molecular weight polyethylene block, comprising:

(a) crosslinking an ultra high molecular weight polyethylene block having a molecular weight not less than 5 million by irradiating the block with a high energy radiation at a level of at least about 1 MR;

(b) subjecting said block to pressure at a deformation temperature; and

(c) subjecting said block to isothermal treatment.

112. (new) A method for producing an ultra high molecular weight polyethylene block according to Claim 111, wherein said irradiation is gamma irradiation at a level of at least about 1 MR.

113. (new) A method for producing an ultra high molecular weight polyethylene block to Claim 111, wherein said deformation temperature is in a range of from about 50° C lower than the melting temperature of the crosslinked ultra high molecular weight polyethylene to about 80° C higher than the melting temperature.

114. (new) A method for producing an ultra high molecular weight polyethylene block according to Claim 113, wherein said deformation temperature is in a range of from about 50° C lower than the melting temperature of the crosslinked ultra high molecular weight polyethylene to the melting temperature.

115. (new) A method for producing an ultra high molecular weight polyethylene block according to Claim 113, wherein said deformation temperature is in a range from the melting temperature of the crosslinked ultra high molecular weight polyethylene to about 80° C higher than the melting temperature.

116. (new) A method for producing an ultra high molecular weight polyethylene block according to Claim 111, wherein said pressure is applied so as to deform the block.

117. (new) A method for producing an ultra high molecular weight polyethylene block according to Claim 116, wherein said block is cooled in a compression-deformed state under pressure.

118. (new) A method for producing an ultra high molecular weight polyethylene block according to Claim 111, wherein said isothermal treatment is at a temperature of from about 100° C to about 130° C for a period of from about 1 hour to about 20 hours.

119. (new) An artificial joint component for implantation in a human or other animal, wherein said component is formed from an ultra high molecular weight polyethylene block having been crosslinked by irradiation, subjected to pressure at a deformation temperature, and subjected to isothermal treatment.

120. (new) An artificial joint component according to Claim 119, wherein said irradiation is gamma irradiation at a level of at least about about 1 MR.

121. (new) An artificial joint component according to Claim 119, wherein said deformation temperature is in a range of from about 50° C lower than the melting temperature of the crosslinked ultra high molecular weight polyethylene to about 80° C higher than the melting temperature.

122. (new) An artificial joint component according to Claim 121, wherein said deformation temperature is in a range of from about 50° C lower than the melting temperature of the crosslinked ultra high molecular weight polyethylene to the melting temperature.

123. (new) An artificial joint component according to Claim 121, wherein said deformation temperature is in a range from the melting temperature of the crosslinked ultra high molecular weight polyethylene to about 80° C higher than the melting temperature.

124. (new) An artificial joint component according to Claim 119, wherein said pressure is applied so as to deform the block.

125. (new) An artificial joint component according to Claim 124, wherein said block is cooled in a compression-deformed state under pressure.

126. (new) An artificial joint component according to Claim 119, wherein said irradiation is conducted in the presence of oxygen.

127. (new) An artificial joint component according to Claim 126, wherein, after said isothermal treatment, said block is processed by a process comprising cutting said block to form said component.

128. (new) A method for producing an ultra high molecular weight polyethylene artificial joint component for implantation in a human or other animal, comprising:

(a) crosslinking an ultra high molecular weight polyethylene block by irradiating the block with a high energy radiation;

(b) subjecting said heated block to pressure at a deformation temperature; and

(c) subjecting said block to isothermal treatment; and

(d) processing said block to form said component.

129. (new) A method for producing an ultra high molecular weight polyethylene artificial joint component according to Claim 128, wherein said irradiation is gamma irradiation at a level of at least about 1 MR.

130. (new) A method for producing an ultra high molecular weight polyethylene artificial joint component according to Claim 128, wherein said deformation temperature is in a range of from about 50° C lower than the melting temperature of the

crosslinked ultra high molecular weight polyethylene to about 80° C higher than the melting temperature.

131. (new) A method for producing an ultra high molecular weight polyethylene artificial joint component according to Claim 130, wherein said deformation temperature is in a range of from about 50° C lower than the melting temperature of the crosslinked ultra high molecular weight polyethylene to the melting temperature.

132. (new) A method for producing an ultra high molecular weight polyethylene artificial joint component according to Claim 130, wherein said deformation temperature is in a range from the melting temperature of the crosslinked ultra high molecular weight polyethylene to about 80° C higher than the melting temperature.

133. (new) A method for producing an ultra high molecular weight polyethylene artificial joint component according to Claim 128, wherein said pressure is applied so as to deform the block.

134. (new) A method for producing an ultra high molecular weight polyethylene artificial joint component according to Claim 128, wherein said irradiation is conducted in the presence of oxygen.

135. (new) A method for producing an ultra high molecular weight polyethylene artificial joint component according to Claim 134, wherein said processing step comprises cutting said block to form said component.

136. (new) A method for producing an ultra high molecular weight polyethylene block according to Claim 128, wherein said isothermal treatment is at a temperature of from about 100° C to about 130° C for a period of from about 1 hour to about 20 hours.